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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,041	11/20/2000	Sang-Jun Choi	SEC.741	6853

7590 06/25/2002

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EXAMINER

CLARKE, YVETTE M

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 06/25/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-2

Office Action Summary

Application No.

09/715,041

Applicant(s)

CHOI ET AL.

Examiner

Yvette M Clarke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 102

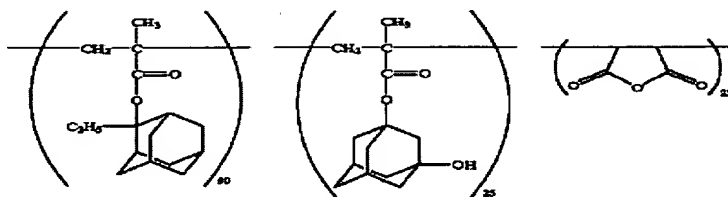
1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

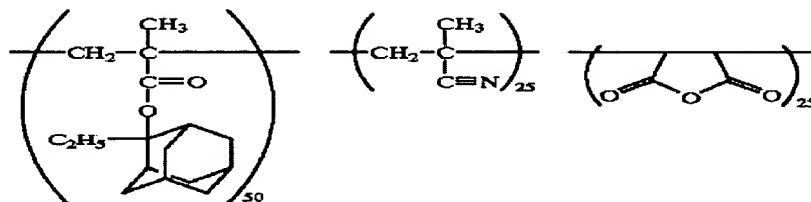
2. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-10 and 12-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujishima et al. (US 6239231 B1). Fujishima exemplifies a chemical amplifying type positive resist composition comprising a resin D (c. 12, l. 51-c. 13, l. 14) having the given formula:



and resin E (c. 13, l. 15-55) having the given formula:

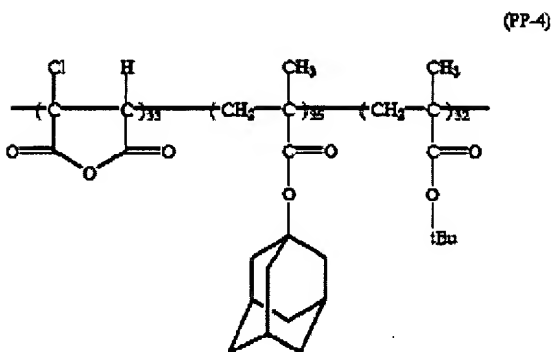
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The said resin D has a molecular weight of about 17,000 and resin E has a molecular weight of 3,400. It is the examiner's position that the first monomer meets the limitations of the claimed "m" monomer and the third monomer meets the limitation of the claimed "n" monomer. Fujishima teaches a mole ratio of m:n of 50:25, which gives a $m/(m+n)$ of 0.67 thereby meeting the limitations of instant claim 1. Fujishima further exemplifies resin D and E in a photosensitive composition comprising 10 parts resin; 0.2 parts p-tolyldiphenylsulfonium trifluoromethanesulfonate as the acid generator and 0.015 parts 2,6-diisopropylaniline as a quencher (see ex. 1 and 2; c. 17, l. 30-c. 18, l. 59; see also c. 8, l. 57-67). It is the examiner's position that the p-tolyldiphenylsulfonium trifluoromethanesulfonate meets the limitation of a triarylsulfonium salt and that 2,6-diisopropylaniline meets the limitation of a basic compound as set forth by the applicant.

4. Claims 1-3, 5-7 and 9-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Asakawa et al. (US 6280897 B1). Asakawa teaches a photosensitive composition comprising a polymer having a polymer having a repeating segment represented by the general formula (1A) and a compound capable of generating an acid by irradiation of an actinic radiation (abstract). Asakawa exemplifies a high molecular copolymer represented by chemical formula (PP-4), having the structure:

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(c. 80, l. 15-34). It is the examiner's position

that either monomer 2 or 3 will meet the limitations of the claimed (meth)acrylate monomer having an acid labile tertiary alkyl group. In the given formula monomers 1 and 2 exemplify a monomeric ratio of 0.52 ($35/(33+35)$). Thereby meeting the limitations of instant claim 1. The said polymer is admixed with a photoacid generator and a solubility inhibitor to prepare a resist composition (see Table 14). The photoacid generator is triphenylsulfonium trifluoromethanesulfonic acid (TPS-OTf) (see c. 65, l. 59-60), which is structurally equivalent to triphenylsulfonium triflate.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujishima et al. (US 6239231 B1) as applied to claims 1-10 and 12-13 above. Fujishima, as discussed above, exemplifies the use of p-tolyldiphenylsulfonium trifluoromethanesulfonate as the acid

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generator (see ex. 1 and 2). However, the specification lists several examples of suitable acid generators including diphenyliodonium trifluoromethanesulfonate, bis(t-tert-butylphenyl)iodonium trifluoromethanesulfonate and triphenylsulfonium trifluoromethanesulfonate (c. 6, l. 54-c. 8, l. 7). One of ordinary skill in the art would have been motivated to use any of the listed acid generators in the taught photosensitive composition.

7. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujishima et al. (US 6239231 B1) as applied to claims 1-10 and 11-13 above, and further in view of Hosaka et al. (US 5405720 A). Fujishima as discussed above teaches a photoresist composition comprising a resin, a photoacid generator, and a quencher. Fujishima further teaches that the composition may also contain, if required, various additives such as sensitizers, surfactants and dyes in small amounts (c. 8, l. 64-67). Hosaka teaches that it is well known in the art that surfactants are conventionally used to improve the coatability and striation of the radiation sensitive composition. Usable surfactants include nonionic surfactants such as polyoxyethylene ethers, polyethylene glycol dialkyl ethers and fluorine containing surfactants such as MEGAFAC F 171 (c. 6, l. 61-c. 7, l. 28). The surfactant can be used alone or in combination and is usually present in the amount of 1-2% by weight. One of ordinary skill in the art would have been motivated by the teachings of Fujishima to use any conventional surfactant, such as those taught by Hosaka in the taught photoresist composition of Fujishima in order to improve the coatability and striation of the taught composition.

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8. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakawa et al. (US 6280897 B1) as applied to claims 1-3, 5-7 and 9-11 above. Asakawa, as discussed above, teaches a photosensitive composition comprising a polymer having a polymer having a repeating segment represented by the general formula (1A) and a compound capable of generating an acid by irradiation of an actinic radiation (abstract). Asakawa further teaches that in order to reduce an influence of deactivation caused by adsorption of a basic contamination in the environment a trace amount of basic compound is used. Examples include t-butyl pyridine, diphenylaniline and N-methyldiphenylamine (c. 38, l. 55-c. 39, l. 6). The basic compound is used in the amount of 0.1-50 mole%, which falls within the claimed weight percent of instant claim 13. One of ordinary skill in the art would have been motivated by the teachings of Asakawa to make a photosensitive composition comprising a polymer having a repeating segment represented by the general formula (1A), a compound capable of generating an acid by irradiation of an actinic radiation and a basic compound which is used to reduce the influence of deactivation caused by adsorption of a basic contamination in the environment.

9. Claims 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asakawa et al. (US 6280897 B1) as applied to claims 1-3, 5-7 and 9-13 above, and further in view of Kinsho et al. (US 6312867 B1). Asakawa, as discussed above, teaches a photosensitive composition comprising a polymer having a polymer having a repeating segment represented by the general formula (1A) and a compound capable of generating an acid by irradiation of an actinic radiation (abstract). Asakawa further teaches that in order to reduce an influence of deactivation caused by adsorption of a basic contamination in the environment a trace

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amount of basic compound is used. Examples include t-butyl pyridine, diphenylaniline and N-methyldiphenylamine (c. 38, l. 55-c. 39, l. 6). Kinsho teaches the use of a basic compound to suppress the rate of diffusion and therefore improve resolution. Kinsho teaches that suitable basic compounds include secondary and tertiary aliphatic amines such as diethylamine, triethylamine and triisobutylamine (c. 32, l. 46-c. 34, l. 34). One of ordinary skill in the art would have been motivated to substitute the surfactants of Asakawa for the surfactants of Kinsho in order to suppress the rate of acid diffusion as well as improve image resolution.

Response to Arguments

10. Applicant's arguments filed April 10, 2002 have been fully considered but they are not persuasive. Applicants argue that the amendment to the claims to change the "comprising" language to "consisting essentially of" language eliminates the cited references as prior art. The examiner disagrees. The applicant has failed to prove that the presence of additional monomers has a *material affect* on the claimed polymer and photoresist composition of instant claims 1 and 5 respectively. MPEP 2111.03 states :

The transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. In re Herz, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976) (emphasis in original) For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., PPG, 156 F.3d at 1355, 48 USPQ2d at 1355 ("PPG could have defined the scope of the phrase consisting essentially of" for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention."). See also In re Janakirama-Rao, 317 F.2d 951, 954, 137 USPQ 893, 895-96 (CCPA 1963). If an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting

essentially of,” applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant’s invention. In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also Ex parte Hoffman, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989)...

Furthermore, “consisting essentially of” language covers the embodiments discussed in the specification. Page 6 of the specification clearly discloses that, “another (meth)acrylate monomer may be further added to form a terpolymer” (lines 9-10). Example 15 of the specification exemplifies a terpolymer comprising maleic anhydride, 8-ethyl-8-tricyclodecanyl methacrylate and methacrylic acid. Therefore, the “consisting essentially of” language covers the use of terpolymers as taught by the prior art. As established by the MPEP, the burden lies upon the applicant to show that additional polymers would materially change the characteristics of the claimed invention.

11. Applicants also refer to the use of the term copolymer as opposed to the term terpolymer in the remarks section of paper number 7. Applicants suggest that the term copolymer eliminates the presence of more than two monomeric units. However, the generic definition of copolymer is a polymer with one or more monomeric units. The American Heritage Dictionary electronic version defines copolymer as:

co·pol·y·mer (ko-pòl¹e-mer) *noun*
A polymer of two or more different monomers.
— **co·pol¹y·mer¹ic** (-mèr¹îk) *adjective*¹

12. The examiner maintains the rejections of record.

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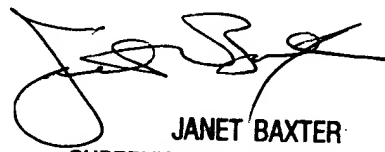
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13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

14. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette M Clarke whose telephone number is 703-305-0589. The examiner can normally be reached on Monday-Thursday 7-5:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 703-308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.

ymc
June 24, 2002


JANET BAXTER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700